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ABSTRACT

The Colorado Department of Education undertook the establishment of an educational quality database that would contain the information necessary for measuring the effects of various efforts at educational improvement. Five major planning concerns had to be resolved before the database itself could be established. First, it was determined that methods were needed for monitoring student achievement and educational quality, for analyzing the effects of past reform efforts, and for projecting future needs and trends. Second, five levels of policy decision-making were identified: school, district, state, national, and international. Decisions at each level are affected by indicators of educational quality and by recognition of factors that influence educational quality. Third, a review of data currently being collected will permit streamlining present data collection processes and increasing the usefulness of the data gathered. Fourth, an adequate system for informing the public of assessment results and plans for change can be developed using printed reports, news conferences, and personal presentations. Fifth, the database development effort itself can provide benefits before the database is completed and in use. Information gathered in the process can inform the public and be used to support changes in policy, regulations, and legislation. An outline of Colorado's educational quality indicators and a summary of the state's Educational Quality Act of 1985 are appended. (PGD)

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Colorado and Excellence in Education

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by

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Colorado and Excellence in Education

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Colorado Department of Education

During the past couple of years, we have been aware of various reports such as:

"A Nation At Risk"
"A Place Called School"
"High School"
"The Secretary's Wall Chart"
"Action in The States"
etc.

In Colorado, we have regarded this time period as a "window of opportunity" for education, and, if we did not take advantage of the high level of interest, we may have to wait for several years for another chance to stimulate change. Please note that I stated the high level of interest and not a high level of concern regarding education. I think that in itself indicates our positive attitude toward this opportunity.

First, it was necessary to determine where we are in the state with respect to reporting on educational quality. I would like to inform you that we have made some progress in this state since a report published in 1894 by the State Superintendent which contained the following passages:

SCHOOL OUTHOUSES

> "It is strange, but true that as guardians of the children, in endeavoring to keep them out of the way of the tiger (ignorance), we forget the reptiles and poisonous vipers that lurk in the way, which, while smaller, are fully as deadly.
>
> The state provides for the education of her children and votes liberal sums of money for houses, teachers, books, apparatus, etc. The idea is the proper education of the child for future citizenship. And yet an education which develops the intellect while it weakens the moral nature is as bad as no education at all. Children attend school at an impressible age - at a time of life when all impressions make lasting effects, and it is of vital importance to the betterment of our public schools that the heart, the brain and the body be all educated along proper and wholesome lines.
>
> I am fully convinced that a great portion of the immorality of the day owes its existence to improperly erected or protected school outhouses.
>
> The directors having supervision over any school district of this state, shall provide suitable and convenient water-closets or privies for each of the schools under their charge, at least two in number, which shall be entirely separated each from the other and have separate means of access, and the approaches thereto shall be separated by a substantial close fence not less than seven feet in height. It shall be the duty of the officers aforesaid to keep the

same in a clean and wholesome condition, and a failure to comply with the provisions of this act on the part of the directors shall be sufficient grounds for removal from office, and for withholding from the district any share of the public moneys of the state."

Now that is real accountability!!

STATISTICS

"The department had, at great trouble and considerable expense, prepared a set of tables of original character and deemed completeness and value. There were one hundred and twenty odd items taken from the county superintendent's report of each county, giving the amount of money collected for each fund; when and for what expended, giving the salary of each teacher in each county and the length of school term in each district. The number of mills tax, special and general, in each district; the condition of the school buildings, benches, books, etc. The statistics of each county were given by themselves, so that all might see the difference in our school conditions in each part of the state. After the tables were all prepared and ready for the printer, someone stole them. The department immediately set to work to recopy the figures from the reports sent to this office by the county superintendents. When this work was well under headway, the reports of 1894 from the county superintendents were stolen. Thus, the department was under the necessity of putting out the report with the present meager statistics or not issue the report at all."

Does that sound similar to some of the thoughts that each of us has had when pressured to provide information that we felt was weak?

All humor aside, my point is that many of the questions asked (and answered) in earlier times are still with us. For example, Table A. lists the statistics provided by the State Superintendent in 1898.

Table A. Statistical Reports Provided in 1897-1898

Census
Enrollment and Attendance
Teachers and Salaries
Per Capita Expense and School Houses
Receipts
Disbursements
School Bond Account

Examination of Teachers
Apportionment

Today, we gather a great deal of information in Colorado; unfortunately, it has simply been an expansion of the areas cited in Table A.

As a result of all the national and local interest in educational reform, it became increasingly clear to us that there was a basic need for an educational quality data base. Many of the districts, as well as, departmental staff questioned the value of this effort. It seemed to us that the complacency of some individuals was so strong

that they clearly reinforced the very need to establish a solid educational data foundation. To some of us, it seemed rather obvious that if we were to measure the effects of new activities stimulated through task forces, departmental priorities, and/or legislation, it would be necessary to determine where we were in certain areas. It also became evident that if we choose not to pursue this objective that we could very likely assume that "A Nation At Risk - Volume II" would be reported in the future. Therefore, a relatively small core of departmental staff initiated activities to establish a reasonable educational information base.

One of our primary concerns was to identify the major or key questions that were being asked both within Colorado and across the country. Table B lists the questions that we identified within the state.

Table B. Common Questions Regarding Educational Quality

- What is the value of a high school diploma?
- How are students performing in the classroom?
- How can we identify quality programs and districts?
- How do I know if students are prepared for future challenges and opportunities?
- How well are students doing in areas other than basic skills, such as foreign language, citizenship, physical fitness, critical thinking, problem solving, etc.?
- How are minority students doing in comparison to all students?
- How can state and local decision makers propose improvements to the system if the current quality of the system cannot be described or documented?
- How can we measure the cost effectiveness of our educational system?
- Does an increase in the school districts ARB = quality?
- Does an increase in teacher salary = quality?
- Does a class size of 1 to 15 = quality?

Do any of these sound familiar? Probably so, in that our daily tasks as educational researchers are focused upon developing responses to these types of questions. To attempt to provide responses to these questions, we addressed ourselves to five major planning questions.

The first major question we looked at was: "What do we need to know in order to assess educational quality?".

Our approach to the resolution of this question has been to use three interrelated components which focus upon assessing the present status while promoting the future of education. The three components are (1) an on-going system of monitoring or tracking current quality; (2) careful analysis of the effectiveness of strategies

designed to improve some aspect of the educational system; and (3) projections of future trends and needs that will affect the educational system.

The first component, "a system of monitoring or tracking quality," is based upon the establishment of a multiple set of quality indicators. The premise for multiple indicators is the recognition that: (a) the use of multiple indicators provides important information for interpreting student achievement results; (b) education has multiple goals; and (c) some indicators provide information about factors that are believed to be closely related to student outcomes and are directly influenced by state and local policy.

The second component, "analysis of strategies to be designed to improve the educational system," is focused upon assuring that past mistakes are not repeated. Through a concerted evaluation effort, we must assess the actual, as opposed to the intended effects of our improveent strategies, in order to complete our review of educational quality in the state.

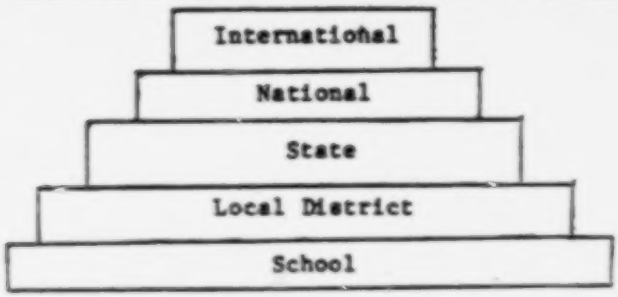
The final component of a total system designed to assess educational quality focuses upon "projecting future needs." It is this area that we as educational researchers can have the greatest impact upon the future direction of education. However, we must present this information to key policy makers in a way that creates a sense of excitement and opportunity. A couple of examples follow: Analysis of census projections provided through several sources indicate that the number of Hispanic students attending pubic schools will increase dramatically in the next 15-20 years. This conclusion is based upon the fact that the number of Hispanic women in the age group of peak child-bearing years will be much greater than any other ethnic group. It does not take a great deal of wisdom to predict the results of that simple demographic fact. Other examples of trends that will affect educational quality are in the increase in number of single parent families and families with both of the parents working. What kinds of economic factors will affect future job markets? What are the implications of these for our educational systems? Will our teacher supply be adequate, or do we need to start planning now for attracting students into the teaching profession?

It is these issues that we hope to also address within our state as we attempt to answer the question of "How do you spell quality?"

The second major question we looked at was: "What do we need to know in order to provide guidance to policy decision makers?".

In Colorado, we are attempting to approach this question through the design of a data base that provides quality indicators for three levels of policy decision making within the state. Table C. presents the general model.

Table C. Information Needed for Various Levels of Decision Making



School Level : Information is needed ideally to:

A. Assess individual student progress
B. Assess program progress
C. Assess teacher performance
D. Report to parents and other constituents

Local District Level : Information is needed ideally:

A. To guide district policy regarding curriculum change
B. To adjust graduation standards
C. To guide district technical assistance programs
D. To compare progress with other state or national data as appropriate
E. To report to the public on the status of education within the district

State Level : Information is needed:

A. To guide state policy makers in initiation of educational change
B. To guide legislative proposals through enactment
C. To guide technical assistance efforts
D. To report to the public on the status of education
E. To compare to national data

National Level : Information is needed:

A. To guide policy decisions
B. To guide educational legislation
C. To report to the general public

International Level : Information will be used:

A. To assess our ability to compete internationally
B. To indicate our potential in the areas of economic competitiveness
C. To predict our national economic survival

In consideration of these five levels of decision making, there is a need for a common set of data or quality indicators that can be used by each succeeding level of decision makers. It became very obvious that we needed information, and not just data, that clearly reflects the progress of students, school programs, school districts, and education in general.

The educational quality indicators for Colorado have basically been divided into two areas:

A) Indicators of educational quality, and
B) Factors that affect educational quality.

Table D. lists the components included in each area and examples. A more complete listing of current and proposed indicators is provided in Appendix A.

While the list is rather extensive, there may not be a need to gather all of this information annually. Some information may only be needed from a sample of districts in order to obtain satisfactory state data. The development of statistics from certain areas such as the effective use of school time may be most appropriately collected through short-term, in-depth studies. In other words, alternatives are presently being pursued to assure adequate information is gathered for decision making and reporting while minimizing the data gathering efforts at the local level. However, education in Colorado is a very large social service business, and we feel strongly that greater efforts must be made to assure the legislature and the public an adeqeuate return on the educational investment dollar.

Table D. Colorado Educational Quality Indicators

A. Indicators of Educational Quality

1. Student Outcomes - Academic

   - Graduation rate, number of GED certificates, achievement scores for basic and higher order skills, course taking patterns, assessment of academic preparation.

2. Student Outcomes - Vocational

   - Vocational preference and choices, job placement, employability skills.

3. Student Outcomes - Personal/Social/Civic

   - Dropout rate, extracurricular activities, disciplinary action.

4. Education Staff - Quality

   - General knowledge, subject matter knowledge, basic skills performance, staff qualifications (degrees), teacher evaluation results.

5. Education Program - Information

   - Graduation requirements, amount of homework assigned, use of technology.

B. Factors that Affect Educational Quality

1. Descriptive/Demographic Information

   - Births and birthrate, population trends, educational attainment of population, teacher supply and demand, staff turnover rate, student mobility, teacher-pupil ratio.

2. Fiscal Data

   - Per pupil expenditure, revenue by source, transportation expenditure, food service expenditure, categorical program expenditure.

The third major question we considered was: "How do we collect the information?".

The answer to that question can perhaps be summarized into two words: "very carefully." In reality, a great deal of this information is already being gathered. However, as is often the case, it is not in the precise format that we would like to have such data.

Like many educational researchers, we have continued to ask for more and more data over time with little or no regard for the ultimate impact this has had upon data collection and data processing. Big has always been better to many of us. This reality of life became even more apparent to me when I became responsible for management information systems, data processing or whatever it may be called by various organizations.

In a consistent manner, we are methodically attempting to answer the following questions which relate to a main theme of <u>who and how is the information to be utilized?:</u>

- What do we collect currently that could and should be deleted?
- What do we collect that should be modified?
- What additional information is needed?
- What special studies should be pursued?

Most people would probably agree with this standard approach. Perhaps many of you have pursued similar activities and therefore feel this approach is not terribly unique. The advantage to us is that we plan to sell our need for additional information through improved data collection techniques developed for the districts. In other words, we intend to reduce the overall collection effort, improve the timeliness, quality, and usefulness of the data being collected at various user levels. Remember "All Things Are Possible!"

The fourth major question we examined was: "How do we best market the results of the education quality efforts?".

I feel rather strongly that this is our weakest area as educational researchers. In reality, we can have all of the quality indicators identified and a good system of information gathering in place; yet if we cannot communicate effectively, we may have not gained one inch toward improving educational quality for students.

How many times have we read something negative about education on the front page of a newspaper? The general response has been a series of rebuttals to the original article on the editorial page three days later. How effective is this strategy?

I believe that we have solved only 50% of the educational quality reporting problem when we have completed the task of identifying the quality indicators. The bigger task for each and every one of us is to package our results in such a way that we communicate with the general public and that we provide at least partial answers to their questions.

Some of the ideas that we are pursuing or plan to pursue in the near future are:

- <u>Series of high quality reports</u> - Begin modeling report formats after business and industry reports and advertisements with a combination of charts, graphs, words, etc. Variation in the physical size of the reports, effective use of color and a real effort to use something other than plain white paper are some key elements. A good example is "U.S.A. Today."

The next time you have a chance, compare that paper to your own reports. While the cost may be higher, think of the potential return on the cost if the public and the legislature start reading the reports.

- Series of News Conferences - On a regularly scheduled basis, conduct a very professional series of news conferences. Typically, we have to call a news conference to respond to some significant problems or issues. This is crisis management. We should consistently let the public know through multi-media sources the facts (both good and bad) about our educational system.

- Department Staff Presentations - Departmental staff are the real ambassadors for education. They are constantly working with large and small groups of both educators and non-educators. Train the department staff to effectively and consistently convey the facts about educational quality in your state.

These are not new or radical ideas. They are "basics" in the world of business and industry. Perhaps we need to establish some basic communications skills test for all educational researchers.

The final major question we faced was: "How quickly can we begin to implement this program?".

I am happy to report that we are well under way in the establishment of an educational quality data base. Some of the major efforts that have been completed or are in progress include the following.

- Completion of a citizen and student opinion poll regarding Colorado education. Some of the areas in which we sought information were: quality of education; testing for promotion and/or graduation; standards for student workload; perceptions of major problems facing education; and teaching as a career.

  Following our new model, we held news conferences to release the results of both polls and produced brochures summarizing the results. It was gratifying to have the information quoted by both the legislators and those testifying before legislative committees.

- Status of K-12 Public Education in Colorado. During the last four years, we have produced a publication that is being effectively used by state educational leaders, local school districts, legislators, and members of the general public. This document has received national recognition as a model educational report. The recognition makes all of us who prepare this document feel very good. However, the real sense of accomplishment comes when you see this report being used on a regular basis in the formulation of educational policy.

- Revision of the State Accountability Rules. The current state accountability law has been in effect since 1971. During the past 14 years, we have continued to stimulate change. Initially the law and the rules governing this effort focused upon the number of books in the library, physical characteristics of the school (I suppose school outhouses fall in this category), etc. We then progressed to more of a process or planning model approach with a major emphasis upon school improvement plans, involvement of the community, and systematic monitoring to insure the process of goal attainment was in place. We have now reached the point of stressing the importance of outcomes rather than inputs. This is a major step to making judgments about the quality of education within the districts. This means reporting regularly, and with integrity, to local citizens on the quality of education in the individual schools and the district as a whole.

- Educational Legislation Being Pursued. Through the efforts of the State Education Commissioner and key legislators, legislation has been introduced to assess the educational quality of the state and provide assistance to resolve problems identified through this process. Essentially we feel committed to assess and improve the quality of efforts in the area where the majority of state funds are expended. The major components of the bill include: assessment of students and staff; remediation of weaknesses identified; and initiation of new approaches. A more detailed explanation of the legislation is presented in Appendix B.

In summary, we have come a long way in Colorado since the days of reporting about school outhouses in state reports. Thus far, I haven't had to report that our statistical data was stolen. Perhaps more important, we have a strong idea of where we are going in the future with our reporting on Colorado's educational quality. We attempted to seize the window of opportunity provided by the recent high level of interest in education. Now our efforts are beginning to gradually bear fruit. Quite frankly, I am really enjoying being a part of it all. The ultimate goal of an educational researcher is to improve the quality of education for students. I believe that we have initiated the process by which that goal can be reached for both the near and the distant future.

Appendix A. Colorado's Quality Indicators

I. Educational Quality

A. Student Outcomes

1) Academic Achievement Data - mathematics, reading, science, writing, literature, computer literacy, critical thinking, high school graduation rate, GED certificates, functional literacy, national assessment data, ACT/SAT, gains of students with special needs, international comparisons.

2) Vocational - vocational choices of college bound secondary students, job placement for vocational students, functional life skills.

3) Personal/Social/Civic - Drop out rates, extra curricular activity participation, student judgment of quality.

B. Staff qualifications and performance

Staff candidate test scores (NTE, CAT, etc.), general knowledge, professional knowledge, staff qualifications (degrees, etc.), staff evaluation efforts.

C. Educational Program Information

Teacher/pupil ratio
Graduation requirements
Comparison of courses taken with graduation requirements
Time spent
School offerings and enrollment

II. Factors that affect educational quality

A. Demographic and Descriptive Information

Teacher supply and demand
Teacher age, sex, race, experience
Number of staff by category
Number of staff by certificate
Salaries and salary comparison
Evaluation of teacher preparation
Number of teacher education graduates by area, institution, etc.
Enrollment trends
Special population enrollment
Non-public school enrollment
Staff turnover rates
Births and birth rates
Population trends
Population by ethnicity, age, etc.
Property valuation
Educational attainment by ethnicity

B. Fiscal

School bond and levy passage
Expenditure for education as percent of total expenditures
Per pupil expenditure
Expenditure as a percent of per capita income
Mill levy, tax rates
Revenues by source
Cost of high school, junior high school, and elementary school
Cost by discipline/area
Cost of extracurricular activities
Transportation cost and trends
Food service cost and trends
Cost of utilities and maintenance
State financing of education and trends
Special education costs and trends
Federal appropriations and trends

Appendix B. Educational Quality Act of 1985

Purpose

Through a four-year plan, assess the quality of the current public school system in Colorado, remediate the problems identified and initiate new approaches to make the educational system more effective and efficient.

Major Components

A. Assessment of the quality of the current public school system in Colorado in order to provide information to educational policy makers and to report to the public on the status of educational quality:

1) Student Assessment:

- Systematic state-level assessment of student progress in the basic skill areas of reading, mathematics, English language usage, science, and social studies.

- Systematic state-level assessment of student progress in other areas, such as: critical thinking, problem solving, analytical skills, writing skills, computer understanding, employability skills, and students entering the system at the kindergarten or first-grade level.

2) Staff Assessment:

- Assessment of the subject matter knowledge, general knowledge, and professional knowledge of all applicants for a Colorado teaching certificate.

- Assessment of the proficiencies of administrators and others applying for various certificates and endorsement areas.

B. Remediation of weaknesses identified through the assessment programs by targeting the districts, institutions, student groups, or subject areas needing assistance. Examples would be:

- Districts with declining test scores;

- Districts with higher than the average dropout rates;

- Subject area problems in social studies, economics, geography, writing skills, and application of functional life skills such as completing forms or balancing check books;

- Teacher education programs identified through the first and third-year teacher preparation study; and

- University and college programs having weaknesses identified through the teacher and administrator assessment programs.

C. Over the next four years, initiation of new approaches having the potential for making the educational system more effective and efficient. Examples of new approaches would be:

- A two-year staff training program of persons charged with evaluating personnel under HB 1338 - Evaluation of Certificated Personnel;
- Implementation of a employability skills program for all high school students during the next three years;
- A two-year project to establish a statewide teacher recognition program in conjunction with the Colorado Association of Commerce and Industry and others;
- Development of a system to report college freshman grades and test scores back to the high school preparing the student;
- Pilot test new approaches to certification among the various teacher education programs;
- Pilot test the "Schools of Excellence" idea for recognizing outstanding efforts of an entire school staff;
- Pilot test a means of improving the coordination and quality of programs to prepare school administrators with particular attention to including the principles of management and personnel from the private sector;
- Promote school district consideration of alternative salary schedules as provided through legislation passed last year;
- Pilot test programs for better services to gifted and talented students and better preparation of teachers to work with high achieving students; and
- Pilot test educational programs which utilize the new technology for delivering student instructional programs and inservice programs to school staffs with particular attention to the rural areas.

D. Fiscal Provision: Funds for this four-year project effort would be derived from the state equalization program and would therefore not be a request for additional funds from the legislature.